Mass Casualty Triage Simulation for Emergency Preparedness & Response

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Introduction
Medical simulation can be used to enhance the educational experience and effectively train health care personnel to triage victims in the setting of a Multiple Casualty Incident (MCI), providing valuable experience and an appreciation of coordinated disaster response, ultimately improving the competence of skills across various occupations and scopes of practice.

Triage is the process of establishing the priority of care among casualties when the number of ill or injured needing care exceeds available resources. The guiding theory of effective triage is to navigate and survey the scene, as well as interact and converse with the virtual patient. Using medical tools, administering medications, monitoring diagnostic data and performing treatment interventions, users may exercise their patient management skills. Health care providers can sharpen their assessment and decision-making skills to develop an appreciation for patient responses to appropriate and inappropriate patient management.

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Methods & Development
The Sim-Patient Triage Simulator presents users with graphically intense casualties that demonstrate signs and symptoms related to mechanism of injury and physiological status. Scenarios are comprised of an interactive 3D scene, an Incident that produces traumatic conditions and one or more patients. The caregiver can navigate and survey the scene, as well as interact and converse with the virtual patient. Using medical tools, administering medications, monitoring diagnostic data and performing treatment interventions, users may exercise their patient management skills. Health care providers can sharpen their assessment and decision-making skills to develop an appreciation for patient responses to appropriate and inappropriate patient management.

The START system relies upon making a rapid assessment of every available resource. The guiding theory of effective triage is to navigate and survey the scene, as well as interact and converse with the virtual patient. Using medical tools, administering medications, monitoring diagnostic data and performing treatment interventions, users may exercise their patient management skills. Health care providers can sharpen their assessment and decision-making skills to develop an appreciation for patient responses to appropriate and inappropriate patient management.

Learning Management System
Multicasualty triage is a perishable cognitive skill which is not a regular part of any health care provider’s job and frequently opposes core concepts of single or low-volume patient care and management. Current triage training relies upon didactic sessions and tabletop training prior to live actor exercises which require significant advanced planning and coordination.

The Sim-Patient Triage Simulator Learning Management System (LMS) integrates didactic learning content, knowledge assessment and case-based simulation in a SCORM compatible framework. The LMS follows the Familiarize, Acquire, Practice and Validate (FAPV) method for self-paced learning by doing. The LMS tracks student activity and fulfillment of learning requirements for continuing education recordkeeping. A hierarchical content structure, organized as course-module-segments, presents learning material in various media formats. Assessment questions and interactive 3D simulation scenarios are linked to training information.

Future Directions
In June 2006, we will evaluate the influence of this technology upon conventional triage education in a randomized controlled trial of medical students at Duke University. Performance metrics will be obtained using masked data collection of trainee enacted triage upon standardized patients and the START algorithm. Normalized on a scale from 0-100%, will be used to compare student performance.